Long Beach ENERGY
A DEPARTMENT OF THE CITY OF LONG BEACH

G-228
SPECIFICATION FOR THE CONSTRUCTION OF GAS MAIN AND SERVICES

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Specifications and Standards:

All work embraced herein shall be done in accordance with the applicable requirements provided in "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2000 Edition," adopted by the City Council of the City of Long Beach together with City of Long Beach amendments to said document, included herewith, the City of Long Beach Standard Plans and in accordance with these Special Provisions.

Whenever reference is made to "Standard Specifications," it shall be deemed to mean "**STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2000 Edition,"** together with City of Long Beach, California, Amendments to Standard Specifications for Public Works Construction, 2000 Edition.

Notices:

The Contractor shall give advance notice shown below to the proper Agency office, prior to the time each of the following operations is to be commenced:

Operation	Office	Phone	Advance Notice
Design Review	Engineering Section	(562) 570-2030	
Start of Construction	Inspection Section	(562) 570-2085	2 Working Days
*Shutdown of work or resumption of work after shutdown	Inspection Section	"	24 Hours
*Main shutdown, taps	Inspection Section	"	3 Working Days or tie-ins.

*Notice for these operations may be given to the Inspector at the job site in lieu of calling the office.

The Contractor shall also contact Underground Service Alert of Southern California at 1 - (800) 422-4133 not less than 48 hours prior to excavating in each area.

The Contractor shall notify the Long Beach Bureau of Public Service at least 48 hours in advance of excavating around, or adjacent to, any of their traffic signal facilities. For traffic signal notification, contact the Electronics Systems Division, telephone (562) 570-2787. All repair work required for these facilities will be performed by the Bureau of Public Service unless otherwise authorized or directed by the Director of Public Works. In either case, the Contractor shall be responsible for, and bear all costs for, any required remedial work due to damage caused by its operations.

Personnel Qualification Program:

The Contractor shall comply with all the requirements of the Department of Transportation qualification of individuals performing covered tasks on a pipeline facility, Regulations 49 CFR Part 192 Subpart N. It is the responsibility of the Contractor to be familiar with the requirements of these regulations.

Prior to start of work, the Contractor shall provide adequate documentation to LBE to substantiate that he is in full compliance with these regulations. This documentation shall include, but not be limited to, a copy of the Contractor's written D.O.T. mandated Qualification Program.

Long Beach Energy reserves the right to reject any Contractor that does not meet the aforementioned Qualification Program requirements of the D.O.T. regulations.

Long Beach Energy reserves the right to inspect the Contractor's Qualification Program records, if deemed necessary

Verification of Related Work Experience:

To qualify for this project, contractors must:

1. Verify that the Company has been in business for a minimum of five years;

2. Verify that the company has completed three natural gas pipeline projects of comparable size and complexity in the last five years; and

3. Supply current State of California C-34 (pipeline) or Class "A" contractor's license number.

4. Meet all D.O.T requirements.

In order to comply with Item 2, contractors are requested to provide three references who can verify their experience in contract construction work involving the installation of underground natural gas steel and polyethylene pipeline systems. The following information must be provided in connection with each reference:

(a) Identification of the company or government agency involved in a former contract;

(b) Name of person in that company or government agency who can be contacted;

(c) Telephone number of person identified (including area code); and

(d) Description of job, including type of pipe material, size and length of the pipeline.

This information shall be submitted and approved before work is started.

In lieu of the above experience requirements (Items 1 and 2), a Contractor shall be deemed to qualify for this project if that Contractor has satisfactorily completed a project of similar size and complexity for Long Beach Energy within the past 10 years.

If, in the opinion of the Project Engineer from Long Beach Energy, any contractor is not technically qualified to perform the work, or the references submitted by the contractor are unsatisfactory, the Project Engineer, may, at his discretion, reject the contractor.

Drug and Alcohol Testing Program:

The Contractor shall comply with all the requirements of the Department of Transportation (D.O.T.) Drug and Alcohol Testing Regulations 49 CFR Parts 40 and 199 for pipeline operators and the Federal Highway Administration Drug and Alcohol Testing Regulations 49 CFR Parts 382 and 40 for drivers of commercial motor vehicles. It is the responsibility of the Contractor to be familiar with the requirements of these regulations.

Prior to start of work, the Contractor shall provide adequate documentation to substantiate that he is in full compliance with these regulations. This documentation shall include, but not limited to, a current copy of the Contractor's written D.O.T. mandated Drug and Alcohol testing policy indicating:

- Type of tests (pre-employment, preventative, post-accident, etc.) and details of the testing procedures employed;
- Name of the Medical Review Officer and Substance Abuse Professional and an outline of their responsibilities;
- Name of the testing laboratory and proof of N.I.D.A. certification by the U.S. Department of Health and Human Services:
- Name of the collection agency.

The Long Beach Energy Project Engineer reserves the right to reject a Contractor that, in his opinion, does not meet the aforementioned drug and alcohol testing program requirements of the D.O.T. regulations.

Ten days prior to start of construction the Contractor shall submit to the General Manager a copy of the summary of results of the previous three months drugs tests. This summary should include only the total number of persons tested each month and the number of positive and negative test results for each month. The names of those persons tested shall not be included in the summary report.

Long Beach Energy reserves the right, in accordance with the provisions of 49 CRF 199, to inspect the Contractor's program records, upon request, if deemed necessary.

Scope of Work - Pipeline Mains and Service Lines:

Contractor shall furnish all labor, equipment, tools, and materials, unless otherwise directed.

Construction Activity Requirements – Mains and Service Lines

All new main and service lines shall be pressure tested as specified herein before being tied in to the existing gas distribution system.

Backfilling of street excavations and restoration and replacement of paving shall be performed in accordance with Attachment B of this specification.

Construction Activity Requirements – Pipeline Mains

Ditches shall be excavated to a minimum width so as not to damage the pipe coating during installation and to that depth necessary to provide a minimum coverage of thirty-six (36") inches from the top of the pipe to the ground and/or gutter grade level, except where greater depths may be required by special highway or road conditions or to avoid obstructions.

Contractor shall install the specified type of cathodic protection test wires where insulators are installed as indicated on the drawings. Wires shall be brought to grade and terminate in a curb box in accordance with Attachment A, Standard Drawing A-914 or in the adjacent valve box.

Construction Activity Requirements – Service Lines

Unless indicated otherwise, all new service lines shall be ¾" I.P.S. nominal diameter polyethylene and shall be tested as specified herein before being placed into service within the existing gas distribution system.

Ditches for service lines shall be excavated to a minimum width so as not to damage the pipe during installation and to that depth necessary to provide a minimum coverage of eighteen (18") inches on private property and twenty-four (24") inches in streets and roads from the top of the pipe to the ground and/or gutter level, except where greater depths may be required by special road, alley or private property conditions or to avoid obstructions. Branch services shall be installed with a minimum of twenty-four (24") inches of cover at the lot line crossing. Service line separation shall be in accordance with attachment A, Standard Drawing A-986.

Inspection:

A Long Beach Energy Inspector will be designated by the Senior Engineer to act in his behalf in monitoring the quality of the work from the standpoint of compliance with Specification requirements. If, in the opinion of the Inspector, the quality of the construction work is not satisfactory, the Inspector may direct the Contractor to take whatever steps are necessary to bring the quality of the work up to Specification standards or to stop the progress of the work, whichever is appropriate. The Contractor shall comply with all verbal and written orders issued by the Inspector.

Construction Water:

All water used during construction shall be potable water and shall be approved by Long Beach Energy. Water can be obtained from the Long Beach Water Department system by making application for temporary water service to the Commercial Services Bureau of the Financial Management Department, 333 West Ocean Boulevard, Long Beach. The Long Beach Water Department will provide a construction meter for use at the closest fire hydrant available. Charges for this water service will be at the standard established rates of the Long Beach Water Department.

The Contractor shall not use water from any fire hydrant unless said water first passes through a meter provided for the Contractor's use. Furthermore, the Contractor shall not, for any purpose, operate any valve in the Long Beach Water Department system, but shall request any necessary valve operation be done by authorized Water Department personnel.

As-Built Information:

The project will maintain a set of plans for the purpose of entering thereon any changes in alignment, elevation or material that may occur during the course of construction and will complete Long Beach Energy’s standard Service Order and Report Form for each service line installed.

It shall be the responsibility of the Contractor to provide the Inspector with any requested information relative to the installations.

Permits:

The Contractor shall obtain a no-fee excavation permit from the City Public Works Department (10th floor of City Hall) for excavations in the public right-of-way. All required permits of any other nature shall be furnished and paid for by the Contractor.

Materials Furnished by the Contractor:

The Contractor shall furnish all pipe, fittings, tools, vehicles, materials, supplies and equipment and shall perform all necessary tapping and stopping, to complete the project. Materials and supplies to be used on this project shall comply with the following requirements in order to ensure compatibility and uniformity with existing Long Beach Energy's facilities and equipment:

Pipe Placing:

Before the pipe is lowered into the trench, the trench shall be cleaned of all debris and a 6-inch sand bedding shall be placed and compacted in the trench bottom. An accepted alternate method is to place sand mounds to support the pipe 6 inches minimum clear from the bottom of the trench, place the pipe in the trench, then place and compact the bedding. The sand mounds shall be placed at 10 feet on centers minimum and the width and length shall not exceed the width of the trench. The bedding or sand mounds shall be inspected by the Inspector before the pipe is lowered into the trench. Special care must be taken in handling pipe to prevent damage to the pipe and any pipe coatings. Before pipe is lowered into final position, it shall be inspected and abrasions to the pipe or coating shall be repaired.

Pipe installed in open trenches shall be carefully lowered to final grade by hand or by using belt slings. Pipelines, as finally constructed, shall conform to the profile of the excavation at all points and the pipe shall be free from excessive strains after backfilling is complete.

Excavation:

Excavations for pipe trenches and bell holes shall be made by trenching and excavation machines or by hand. All cutting of asphalt and concrete paving on public and private property shall be performed with rotary sawing equipment or by equipment which grinds and pulverizes the paving material. Concrete shall be saw cut to the full depth of the pavement. All excavated material which is to be reused (subject to the restrictions in the paragraph entitled "Bedding, Backfill and Street Surface Restoration") shall be uniformly piled along trenches and bell holes in a manner which will avoid interference with traffic, driveways, roads, alleys, sidewalks and other walkways. All other material shall be removed from the site and disposed of by the Contractor.

If the cut edges of any paved surfaces located in a public street or within the limits of any private property site are broken during the course of construction, they shall be trimmed by saw cutting immediately prior to placing of the permanent asphalt or cement paving.

Trench excavations for portions of service lines located in streets shall have a minimum width of 12 inches measured at the position of the horizontal diameter of the service pipe. The minimum width of the top of the trench shall also be 12 inches. Joint utility trenching shall be performed in accordance with Standard Drawing A-982.

Any water used during the excavation or saw cutting procedures shall not be allowed to migrate into the storm drain system.

Trenches for pipelines in street and alleys shall have a maximum width of 24 inches measured at the position of the horizontal diameter of the pipe. The maximum width of the top of the trench shall also be 24 inches.

The Contractor shall arrange his work so that a maximum of 500 feet of trench (with out plates) in a public street or alley shall be open at any time. The trench excavation work shall be followed immediately by the pipe installation crews.

All excavations shall be kept dewatered by pumping or other means, until the construction or installation of facilities is complete. Water must not be allowed to enter the storm drain system.

Cut and Bore Option:

The use of the cut and bore method for installing lines requires the approval of the Gas and Electric Department. If the Contractor wishes to utilize the cut and bore method of installation the following requirements shall be strictly adhered to:

A. All bellholes through which the pipe passes during insertion into the bore hole will be excavated a distance below the pipe sufficient to allow complete visual inspection by the Gas and Electric Department Inspector. This distance shall be a minimum of 12 inches.

B. During insertion, the pipe shall be rotated and wiped clean and all water and debris shall be removed from the bellholes so that the integrity of the pipe and/or coating can be inspected thoroughly.

C. No piping shall be inserted into any bore hole unless a Gas and Electric Department Inspector is present to observe the operation.

D. All substructures in the path of the proposed pipeline shall be completely exposed prior to insertion of the pipe. Where, in the opinion of the Inspector, the boring operation produces any indication of the possible existence of a substructure interference, a bellhole shall be excavated at that location.

No extra payment will be made for alternative pipeline construction methods. Payment for pipeline construction will be in accordance with the bid proposal, regardless of the construction technique used.

Pressure Testing:

Upon completion of pipeline installation, the complete pipeline system shall be pressure tested with air or nitrogen and approved by Long Beach Energy. The testing gauge must be installed and removed in the presence of the Gas and Electric Department Inspector. The testing gauge used for testing mains shall be a circular chart clock recording gauge which shall produce a permanent graphic record of the test results. After all of the pipe joints of the complete system have been fused or welded together, the ends shall be closed and air or nitrogen shall be pumped into the new pipeline system. The system shall be tested at a minimum of 95 psig for not less than 24 hours.

The system shall stand under the test pressure for the specified time duration. If any air or nitrogen escapes, as shown by a drop in gauge pressure in excess of that attributable to temperature changes, during the course of the test, the contractor shall be required to locate the leak(s) and repair them at his own expense. If the drop in pressure is attributable to a defective weld or fusion joint, the weld or fusion shall be cut out and a new weld or fusion shall be made. In the event that a weld or fusion joint has been cut out and the ends of the pipeline so affected cannot be brought together without damage to the pipe, the contractor shall weld or fuse in a short piece of pipe. The rewelded section of a steel pipeline shall then be field wrapped by the contractor as previously specified herein. After repair work is completed, the testing procedure shall be repeated until the complete system is proved air tight to the satisfaction of the Long Beach Energy Inspector. No additional payment will be made to the Contractor for repair work performed to satisfy the pressure test requirements.

The contractor shall furnish the necessary recording gauges, proof of current calibration, fittings and equipment to pressurize and test the complete piping system with air or nitrogen.

The contractor shall notify the Long Beach Energy Inspector 24 hours in advance when the pipeline system will be ready for pressure testing.

Service Line Installation Procedure:

The following procedure shall be applicable to each new plastic service line installation:

1. Install the new plastic service line with a tracer wire as shown in Attachment A including branched services where designated by Long Beach Energy. Each branched service shall have a separate riser and shut-off valve assembly.

2. Slide a 2" diameter x 12" long PVC sleeve over the anodeless meter riser assembly and bend the riser as required to suit the configuration of the individual meter installation. The bending must be performed very carefully using suitable long radius pipe bending equipment to avoid kinking the pipe or damaging the coating. Any damaged coating shall be repaired with Polyguard tape and primer. The steel portion of the horizontal component of the riser

assembly must be not less than 24 inches long after bending. Attach the riser assembly plastic pigtail to the service line with a socket fusion coupling. Install the riser assembly; with the top of the 2" PVC sleeve approximately 6 inches above grade, as close to the existing riser as practical.

3. Plastic main – with or without EFV installed. Fuse a new P.E. service tee on to the main and connect the outlet of the service tee to the service line or to the EFV with a socket fusion coupling.

4. Pressurize the new service line with air in accordance with the paragraph entitled, “Pressure Test” of these Specifications. The air test shall be witnessed by a Long Beach Energy Inspector. Soap test the new service line while it is pressurized with air. The soap test shall include the service tee where welded or fused to the main, the outlet of the new service tee where welded to the transition fitting (if applicable) and the riser assembly.

5. Upon receipt of authorization to proceed from the Long Beach Energy Inspector, after successful completion of the air test and soap testing, open the shut-off valve at the riser end and allow the new service line to blow-down to atmospheric pressure. (Note: In case the service line is branched, open shut-off valves located at the end of each branch.)

6. Attach the copper tracer wire to the transition fitting adjacent to the service tee or to the tracer wire with the plastic main, run the other end up inside the PVC sleeve on the riser and coil the end around the riser immediately underneath the shut-off valve as shown in Attachment A. Request the Inspector witness the performance of continuity check on the wire.

7. Plastic main with or without EFV installed. Tap out the new plastic service tee to permit flow of gas into the new service line.

8. Purge the new plastic service line with gas through a hose attached to the riser shut-off valve (or through hoses attached to the riser shut-off valve on each service branch, if applicable). The hose(s) shall be of sufficient length to vent off all escaping purge gas into the surrounding air completely clear of all buildings, hot-water heaters, sparking devices, etc. Continue the purge until all air has been completely removed from the line(s). At the completion of the purging operation, close the riser shut-off valve(s) and remove the purging hose(s).

   Caution: Be certain to comply with the requirements of the paragraph entitled, “Control of Static Electricity During Squeeze-Off or Purging Operations”.

9. Plastic main. Install the completion cap on the plastic service tee and soap test.

10. Notify the Long Beach Energy Inspector to make a final examination and obtain his approval of the new service line installed in place before proceeding further.

11. Temporarily attach the appropriate identifying washer (plastic service), ring (branch service) to the riser and advise the Inspector that the meter is ready for connection.

12. Backfill all excavated areas and repave all streets in accordance with the paragraph entitled, **"Bedding, Backfill and Surface Street Restoration"**.

Any other variations in the above procedure to accommodate field conditions must receive the Inspector's approval before being implemented.

Tie-In Procedures:

All tie-ins are to be performed under the supervision, and subject to the approval, of the Long Beach Energy Inspector. All tie-ins that are performed by Long Beach Energy will be billed to the developer.

Whenever a line stopper is inserted into a fitting to shut off the flow of gas a pressure gauge shall be installed on both sides of the fitting to ensure that gas pressure to current customers is not inadvertently reduced. Each gauge will be of an appropriate range with respect to the gas main operating pressure. For example, main pressure of 7-10 psig, 15 psig, above 15 psig, will require a 0-15 psig, 0-30 psig and 0-60 psig gauge, respectfully. This requirement may be waived, with permission of the Inspector, where the insertion of a stopper could not affect the pressure in a line serving current customers.

Pressure Tests:

Service Line Pressure Test:

The Contractor shall furnish the necessary gauges, fittings and equipment to pressurize and test each service line installation with air.

Each new service line system shall be air tested as follows:

> After the complete service line system has been assembled, air shall be pumped into the system through the shut-off valve at the riser end (or through one of the shut-off valves with the other shut-off in the case of a branched service), through an untapped new service tee, or through a special pressurizing/purging manifold. The air test pressure shall then be increased until the complete system with all its branches, if applicable, has been pressurized to a level of 100 psig. The air pressure shall extend from the shut-off valve to the top of the untapped gas main inside the service tee. The plastic system being tested shall be capable of maintaining an air pressure of 100 psig for a period of not less than 30 minutes without any discernible reduction in air pressure when using a gage with a large face diameter by means of which a very small leakage of air during the period of the test can be readily detected. The Contractor shall notify the Long Beach Energy Inspector in advance when service lines will be tested. The Inspector shall witness each service line test. If the service line shows any sign of leakage, the Inspector will designate the air test as a failure.

In the event of failure to pass an air test, the Contractor shall take appropriate steps to eliminate the source of the leakage, at its own expense, and the air test shall be repeated in the presence of the Inspector as many times as necessary to establish the gas tight integrity of the service line system.

Pipeline Main Pressure Test:

Upon completion of pipeline installation, the complete pipeline system shall be pressure tested with air or nitrogen and approved by Long Beach Energy. The testing gauge must be installed and removed in the presence of the Long Beach Energy Inspector. The testing gauge used for testing mains shall be a circular chart clock-recording gauge that shall produce a permanent graphic record of the test results. After all of the pipe joints of the complete system have been fused or welded together, the ends shall be closed and air or nitrogen shall be pumped into the new pipeline system. The system shall be tested at a minimum of 100 psig for not less than 24 hours.

The system shall stand under the test pressure for the specified time duration. If any air or nitrogen escapes, as shown by a drop in gauge pressure in excess of that attributable to temperature changes, during the course of the test, the Contractor shall be required to locate the leak(s) and repair them at its own expense. If the drop in pressure is attributable to a defective weld or fusion joint, the weld or fusion shall be cut out and a new weld or fusion shall be made. In the event that a weld or fusion joint has been cut out and the ends of the pipeline so affected cannot be brought together without damage to the pipe, the

Contractor shall weld or fuse in a short piece of pipe. The welds of the short piece of pipe shall then be field wrapped by the Contractor as previously specified herein. After repair work is completed, the testing procedure shall be repeated until the complete system is proved air tight to the satisfaction of the Long Beach Energy Inspector.

The Contractor shall furnish the necessary recording gauges, proof of current calibration, fittings and equipment to pressurize and test the complete piping system with air or nitrogen.

The Contractor shall notify the Long Beach Energy Inspector 24 hours in advance of when the pipeline system will be ready for pressure testing. The test will not be performed more then 48 hours prior to the transfer of ownership of the line to Long Beach Energy. If for any reason transfer cannot be accomplished within 48 hours, the contractor may, at the discretion of LBE, be require to retest and pass to the satisfaction of the Inspector.

Bedding, Backfill and Street Surface Restoration:

Backfill (including bedding, sand encasements, and trench and pit backfill) shall be constructed in accordance with the applicable provisions of Subsection 306-1.2.1 of the Standard Specifications. However, rocks, broken pavement, or similar materials will not be allowed.

All underground piping shall satisfactorily pass inspection prior to backfilling the trench. The Contractor shall not backfill any trench without the approval of the Long Beach Energy Inspector. Backfilling must not commence until the pipe fits the trench and is at the proper depth and as-built surveys have been completed.

Trench bottoms shall be beveled and prepared to provide a firm, stable and uniform support for the full length of the pipe. The Contractor shall ensure that the bottom of the trench is clear of rocks, sticks, debris or any other objects that could damage the pipe or coating. Any such objects shall be removed to provide a clearance of at least six inches to each side and below all pipe and fittings.

A minimum of six inches of sand shall be required to provide a protective pad or cushion under, around and over the pipe. The bedding material shall be carefully placed and thoroughly compacted around, under and over the pipe to obtain full support throughout its length.

Plastic warning identification tape shall be placed in all open excavations while they are being backfilled. The tape shall be located approximately one foot below finished grade above pipe and service tees.

Upon completion of the required pipe bedding and sand encasement in streets, alleys, driveways and sidewalks, the trench depth from 6 inches above the top of the pipe to not less than one-inch below the bottom surface of the existing A.C. or P.C.C. paving shall be filled with “one sack slurry.” Materials for this slurry shall meet the requirements for Class 100-E-100 concrete as specified in Subsection 201.1.1.2 of the Standard Specifications.

Leak testing of piping shall be completed prior to installing permanent pavement. Temporary asphalt surfacing will be required to maintain road service until the permanent pavement is installed. When temporary asphalt is used, it shall be placed 4" thick and compacted.

When any pavement restoration occurs within 2 feet of an existing construction joint, cold joint, expansion joint, or edge, the pavement between the excavation and the joint or edge shall be removed and replaced in kind along with the excavation paving. It is the bidders responsibility to determine, by site inspection prior to bidding, where these conditions exist and to include the appropriate cost in the base price bid for the pipeline construction. No additional compensation will be paid to the Contractor for extra paving required by these conditions.

Permanent pavement restoration shall commence within ten working days from completion of construction. Final paving may be delayed long enough to allow for the accumulation of at least one full day's work for a crew.

Permanent asphalt street surface restoration shall consist of not less than 5" thick asphalt concrete conforming to the requirements of Class C2-AR-4000 as specified in Section 203-6 of the Standard Specifications. Permanent concrete street surface restoration shall consist of not less than 4" thick portland cement concrete conforming to the requirements of Class 520-C-2500 as specified in Subsection 102-1.1.2 of the Standard Specifications.

Pavement placement methods shall be as follows:

(1) Existing concrete pavement on top of an aggregate granular base will require placing concrete on top of the slurry backfill until flush with the existing pavement and surfacing to match the existing finish.

(2) Existing asphalt concrete pavement on top of aggregate granular base will require placing asphalt concrete on top of the slurry backfill and rolling to match the existing pavement grade. The asphalt concrete shall be applied in two layers, base course and wearing course. The wearing course shall have a minimum thickness of one-inch, plus or minus 1/4 inch, and shall be rolled to match the existing pavement grade.

The Contractor shall employ sufficient personnel and equipment necessary to expeditiously accomplish proper placement and compaction of the asphalt concrete pavement to the satisfaction of the inspector.

Backfilling and Surface Restoration Requirements on Private Property:

Sand bedding of the pipe in open excavations shall be performed as specified in the preceding paragraph entitled **"Bedding, Backfill and Street Surface Restoration"**.

The use of native materials from excavations on private property as fill shall be permitted, except that material such as stones, pieces of wire, concrete, etc., shall not be allowed. Backfill material containing hard lumps of clay, adobe, etc., shall be permitted; however, the Contractor shall take whatever steps are necessary to prevent the consolidated soil pieces from coming closer than 6 inches to any portion of the plastic service line system.

Backfill compaction on private property shall be done with a pneumatic hand-tamping machine.

Plastic warning identification tape shall be placed in all open excavations while being backfilled. The tape shall be located one foot below finished grade over the plastic pipe.

All concrete used for the restoration of driveways, sidewalks, etc., shall be as specified for street surface restoration. Where driveways, walkways or other concrete paving on private property is cut it shall be replaced to the nearest existing joint or edge and the finished surface shall match the existing in all respects.

Guarantee:

The Contractor shall guarantee all work done against failure due to defective materials and/or faulty workmanship for a period of five (5) years from date of acceptance of the completed project by Long Beach Energy unless some other period is expressly set forth.

Whenever any work is to be guaranteed or maintained by a manufacturer, supplier or Subcontractor, said obligations shall be that of the Contractor insofar as Long Beach Energy is concerned.

In view of the constraints which the Public Works Department of the City of Long Beach may impose on any excavation necessary to perform substructure repair work after the street improvements are completed, every precaution shall be taken to ensure that the gas main installation is carried out in such a manner as to eliminate, as far as possible, any flaws which might generate a requirement for future remedial work. In particular, every conceivable effort must be made to preclude any possibility of the new gas main being laid in such a manner that it might come into contact with any other substructure, either inadvertently during installation or as the result of future ground movement.

If within a period of five (5) years following acceptance of the completed installation, surveys indicate the possibility of either a gas leak or a catholic protection current leak, Long Beach Energy will perform the necessary excavation to expose a section of the line at that location. If the problem, in the opinion of Long Beach Energy, originated during the installation work performed under this contract, the Contractor shall reimburse Long Beach

Energy for all repair costs associated therewith, including all excavation, backfilling and paving in accordance with the requirements of the City of Long Beach Department of Public Works. Should the problem prove to have been caused though no fault of the Contractor, Long Beach Energy will assume liability for the necessary repair work at that particular location.

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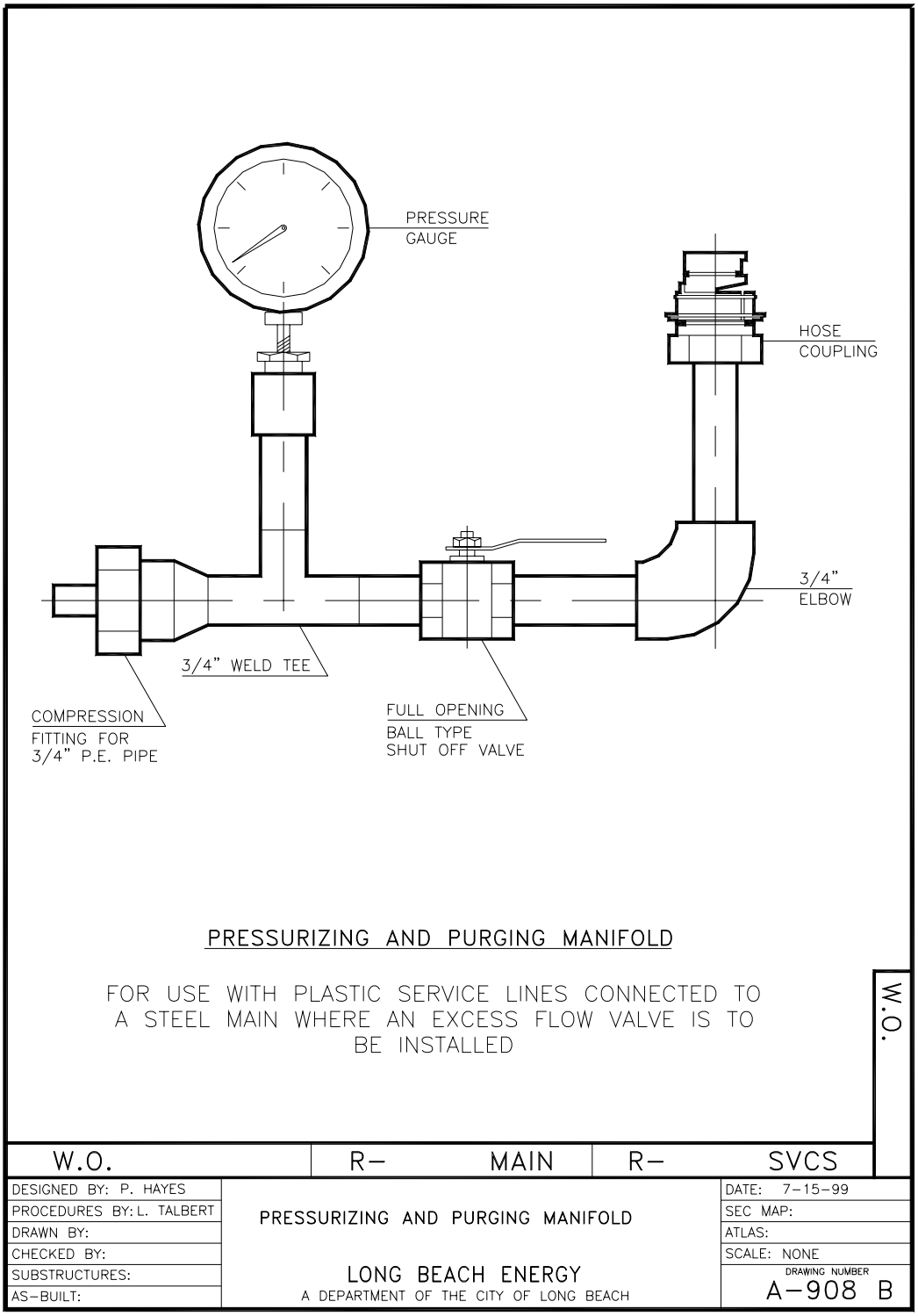
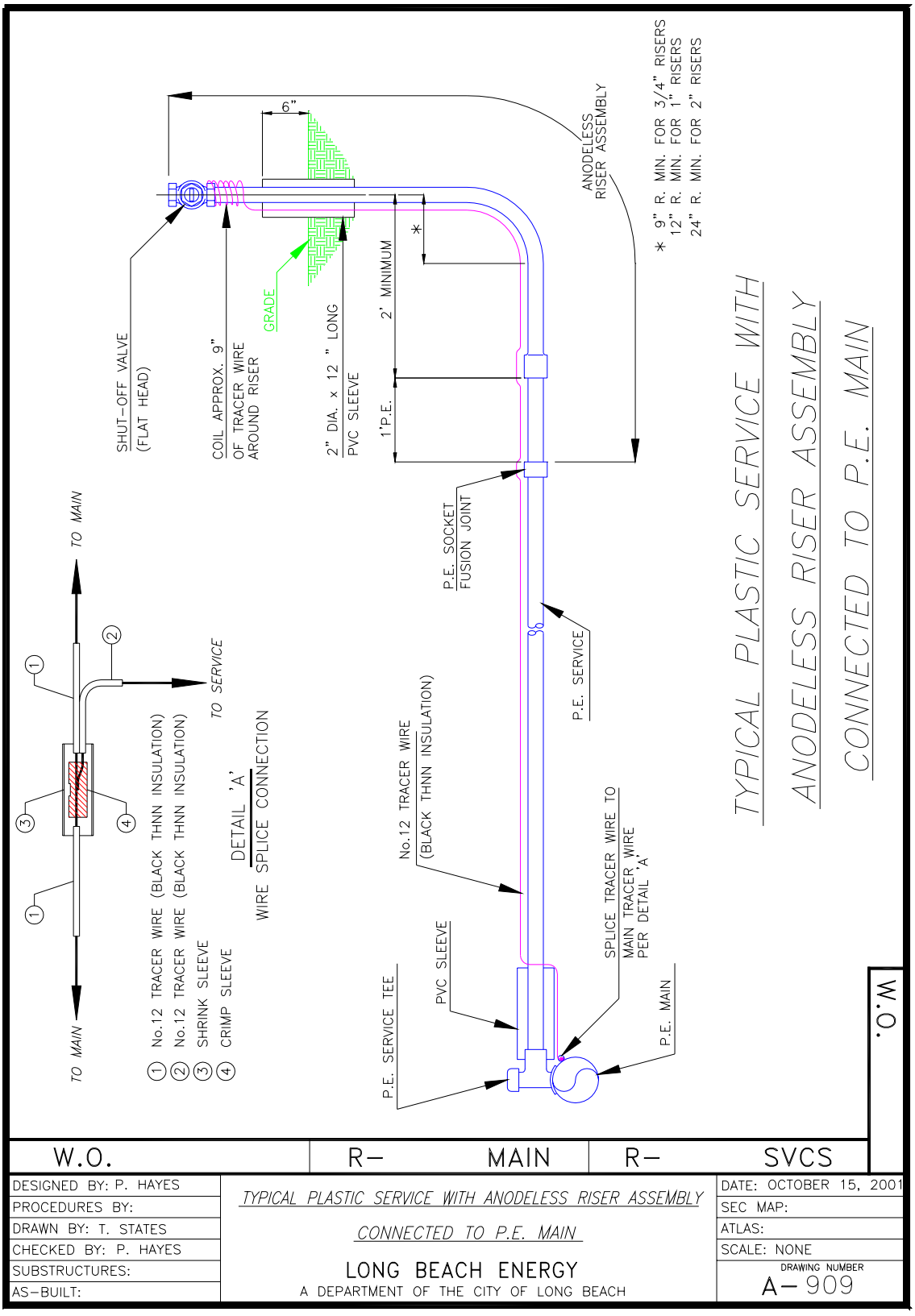
STANDARD DRAWINGS

Drawing A-908B **Pressurizing and Purging Manifold**



Drawing A-909 PE Service with Riser Assembly Connected to PE Main



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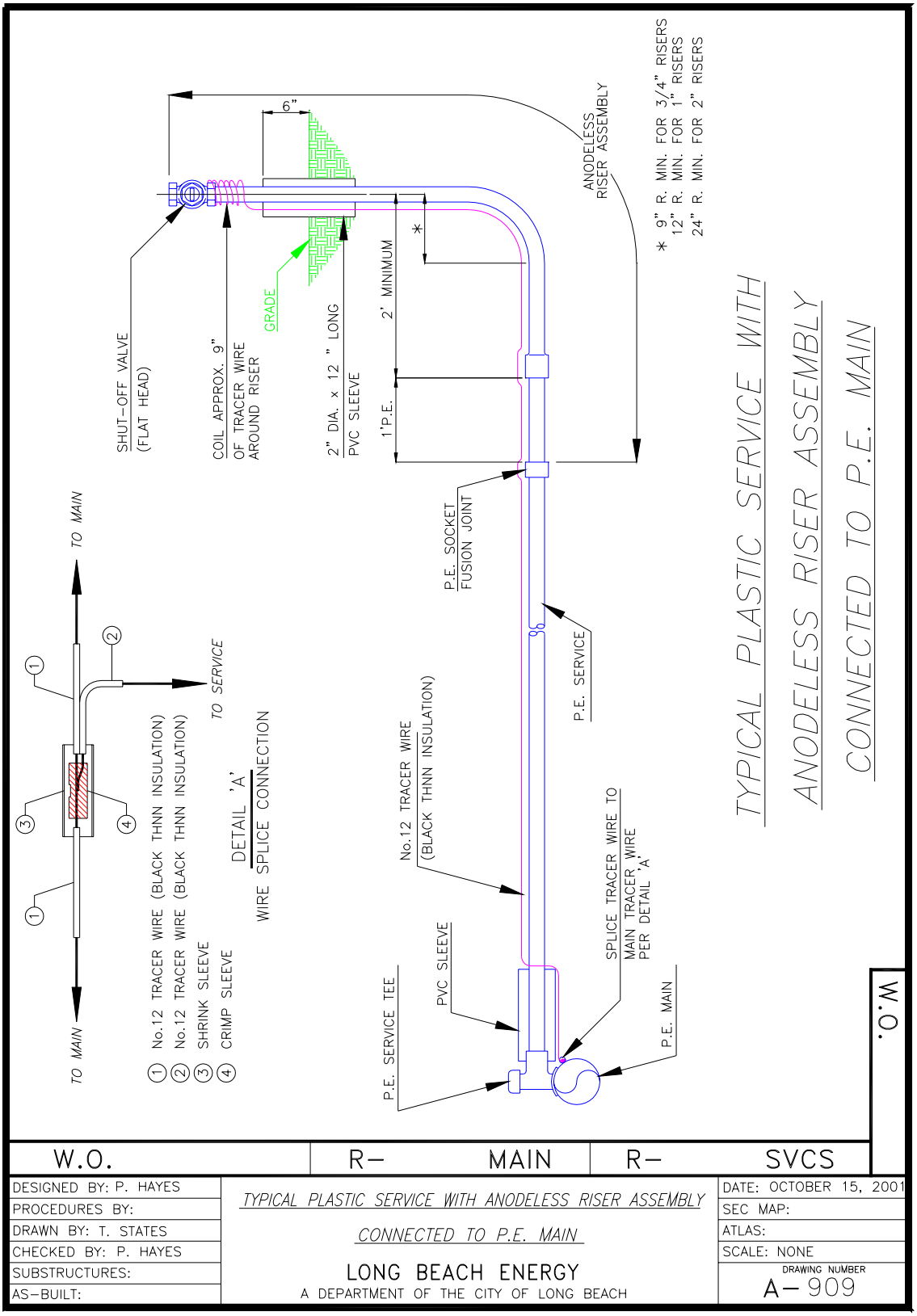
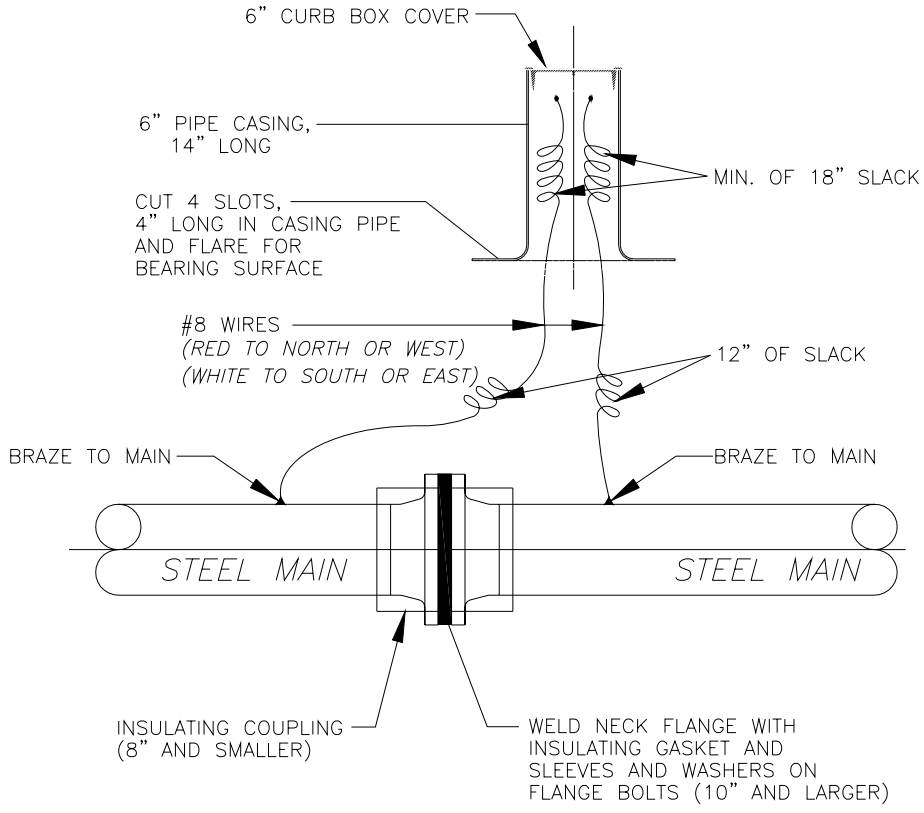


W.O.	R–	MAIN	R–	SVCS

DESIGNED BY: P. HAYES	*TYPICAL PLASTIC SERVICE WITH ANODELESS RISER ASSEMBLY*	DATE: OCTOBER 15, 2001
PROCEDURES BY:	*CONNECTED TO P.E. MAIN*	SEC MAP:
DRAWN BY: T. STATES	LONG BEACH ENERGY	ATLAS:
CHECKED BY: P. HAYES	A DEPARTMENT OF THE CITY OF LONG BEACH	SCALE: NONE
SUBSTRUCTURES:		DRAWING NUMBER A–909
AS–BUILT:		

REVISION 03/03/03

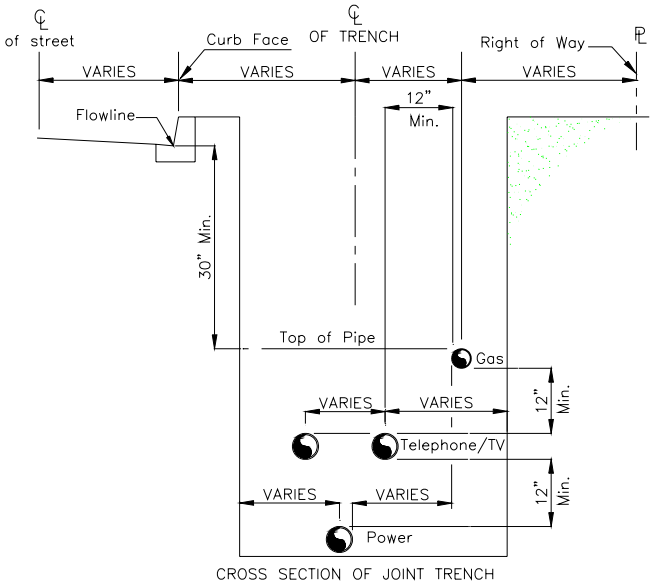
NOTE: LOCATE CURB BOX AND WIRES OVER INSULATOR IN STREET UNLESS AREA IS SUBJECT TO VERY HEAVY TRAFFIC, IN WHICH CASE THEY MAY BE OFFSET INTO ADJACENT SIDEWALK OR OTHER SAFE LOCATION. (IF IN DOUBT, CHECK WITH THE CORROSION CONTROL SUPERVISOR.)



W.O.

W.O.	R– MAIN	R– SVCS

DESIGNED BY: P.HAYES	TYPICAL CATHODIC PROTECTION	DATE: APRIL 7, 1999
PROCEDURES BY:	TEST TERMINAL	SEC MAP:
DRAWN BY: T.STATES	LONG BEACH ENERGY	ATLAS:
CHECKED BY: G.S.	A DEPARTMENT OF THE CITY OF LONG BEACH	SCALE: NONE
SUBSTRUCTURES:		DRAWING NUMBER A– 914

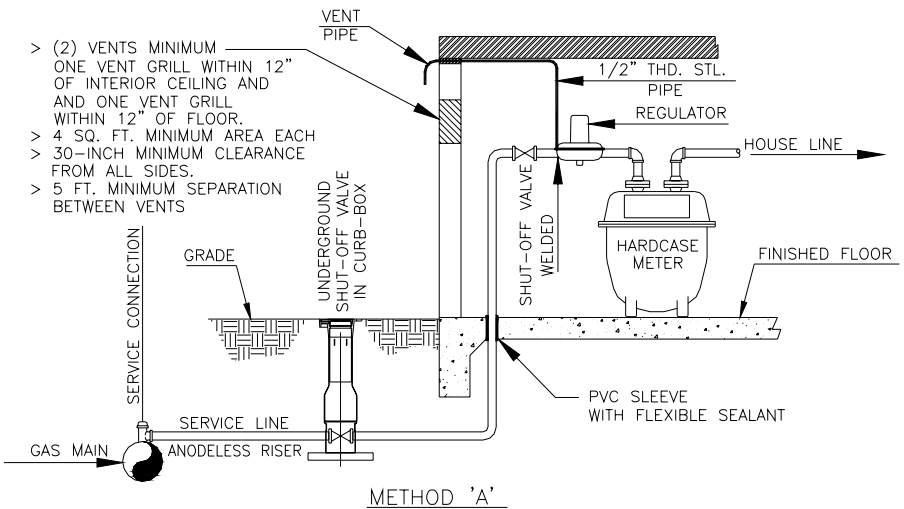


CROSS SECTION OF JOINT TRENCH

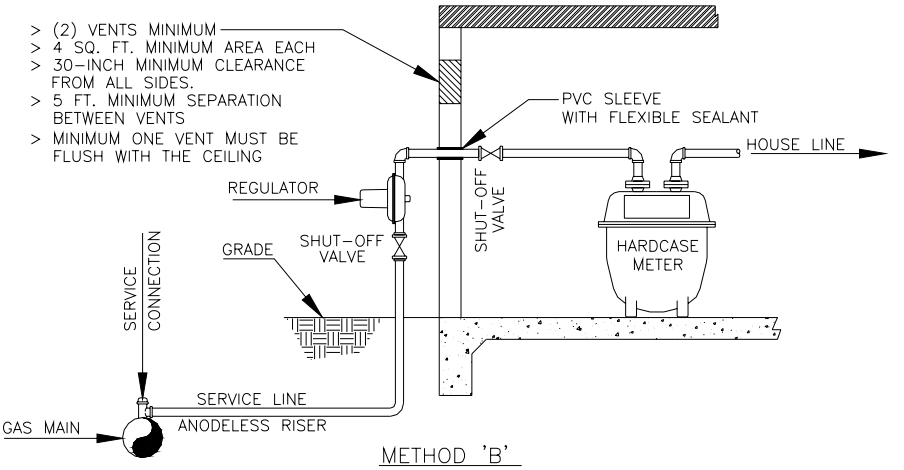
W.O.

W.O.	R– MAIN	R– SVCS

DESIGNED BY: W.HUFELD	JOINT UTILITY TRENCH DETAIL	DATE: JULY 6, 2001
PROCEDURES BY:		SEC MAP:
DRAWN BY: T.STATES		ATLAS:
CHECKED BY: G.S.		SCALE: NO SCALE
SUBSTRUCTURES:	LONG BEACH ENERGY	DRAWING NUMBER A– 982
AS–BUILT:	A DEPARTMENT OF THE CITY OF LONG BEACH	



METHOD 'A'



METHOD 'B'

GENERAL NOTES:

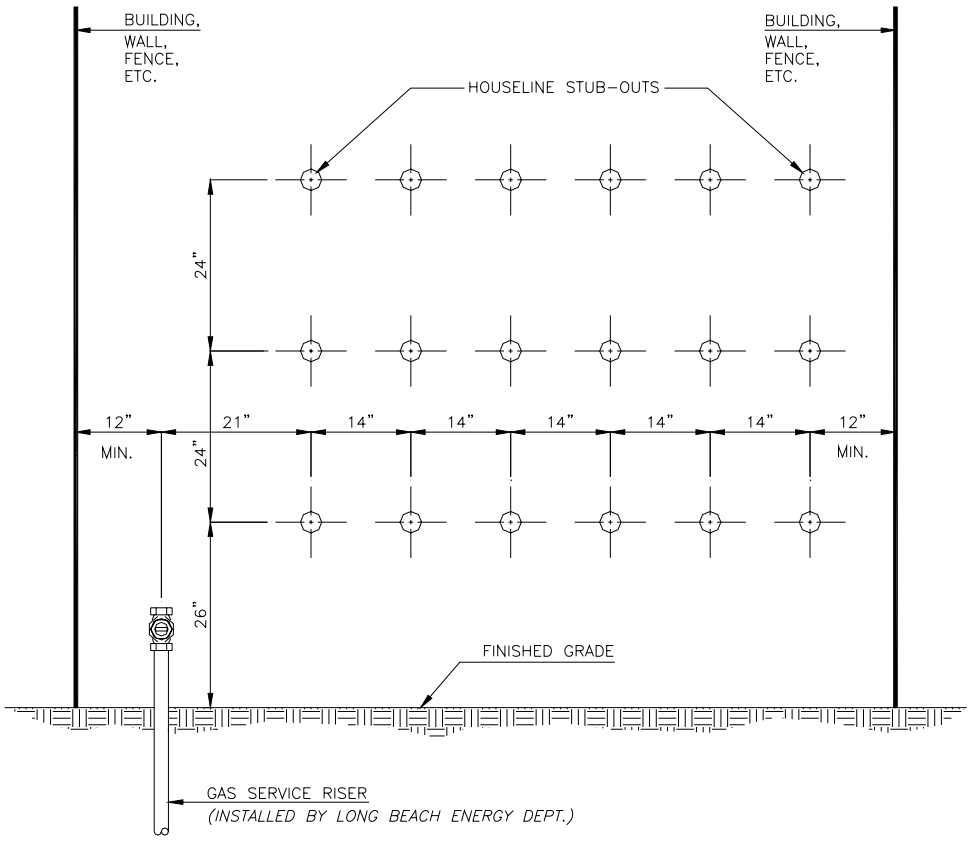
1) ALL PIPE FROM RISER TO REGULATOR INLET MUST BE WELDED.
2) GAS METER LOCATIONS AND GAS PIPING SHALL BE INSTALLED PER CHAPTER 12 OF UPC AND LBE STANDARDS.
3) METER ROOM MUST HAVE A 7 FT. MINIMUM FLOOR TO CEILING HEIGHT.
4) MUST CONFORM TO UMC 1309.0, UPC 1209.0,UFC 1106, AND DOT 49 CFR Ch. 1, PART 192.353d, 357d, 365b.
5) ALL ELECTRIC FIXTURES MUST BE EXPLOSION PROOF.
6) ALL ELECTRICAL AND MECHANICAL EQUIPMENT MUST BE APPROVED BY LBE BEFORE INSTALLATION IN METER ROOM IN ACCORDANCE WITH ARTICLE 500 OF NEC.
7) LBE APPROVED L.E.L. DETECTOR MUST BE INSTALLED AND TESTED BEFORE GASSING OF SYSTEM.
8) METER ROOM MUST NOT VENT INTO BUILDING OR ADJOINING CLOSED SPACES.

W.O.

W.O.	R- MAIN	R- SVCS

DESIGNED BY: W. HUFELD	GAS PIPING INSTALLATIONS FOR METER ROOMS	DATE: JANUARY 10, 2003
PROCEDURES BY:		SEC MAP:
DRAWN BY: BERCERY/STATES		ATLAS:
CHECKED BY: M.Z.		SCALE: NO SCALE
SUBSTRUCTURES:	LONG BEACH ENERGY	DRAWING NUMBER A-983
AS-BUILT:	A DEPARTMENT OF THE CITY OF LONG BEACH	

REVISION 03/03/03



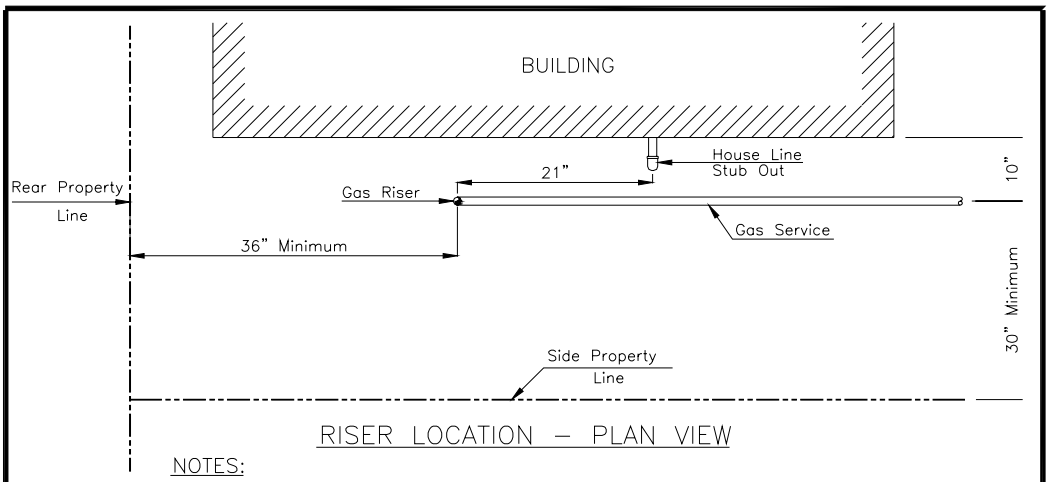
GENERAL NOTES:

1. STUB-OUTS TO EXTEND 2" TO 4" BEYOND THE FINISHED WALL.
2. REVERSE LAYOUT FOR THE RIGHT SIDE GAS RISER.
3. MAXIMUM OF 40 METERS IN ONE HEADER.
4. WHERE POSSIBLE, RACK METERS ONLY TWO ROWS HIGH.
5. IF HOUSE METER IS OVER 400 C.F.H., IT CANNOT BE INCLUDED IN THE HEADER.
6. USE BRASS TAGS ON EACH HOUSE LINE WITH UNIT NUMBERS OF ADDRESS.
7. GAS SERVICE RISER SHALL BE 10" FROM THE FACE OF THE BUILDING, WALL, FENCE, ETC.

W.O.

W.O.	R- MAIN	R- SVCS

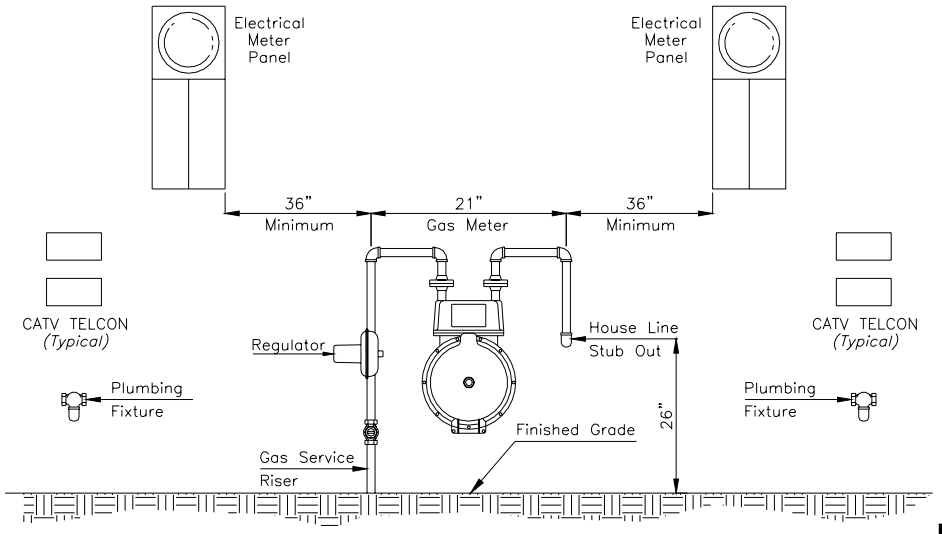
DESIGNED BY: W. HUFELD	TYPICAL STUB-OUT DIAGRAM	DATE: JULY 9, 2001
PROCEDURES BY:	FOR MULTIPLE GAS METER INSTALLATION	SEC MAP:
DRAWN BY: T. STATES		ATLAS:
CHECKED BY: G. S.	LONG BEACH ENERGY	SCALE: NO SCALE
SUBSTRUCTURES:	A DEPARTMENT OF THE CITY OF LONG BEACH	DRAWING NUMBER A-985



RISER LOCATION – PLAN VIEW

NOTES:

1. DIMENSIONS FROM REAR AND SIDE PROPERTY LINES ARE IN ACCORDANCE WITH THE CITY OF LONG BEACH MUNICIPAL CODE, CHAPTER 21–31, TABLE 31–3. A VARIANCE MAY BE GRANTED ON A CASE BY CASE BASIS FROM LONG BEACH ENERGY INSPECTION.



EQUIPMENT LOCATION CLEARANCES – ELEVATION

W.O.

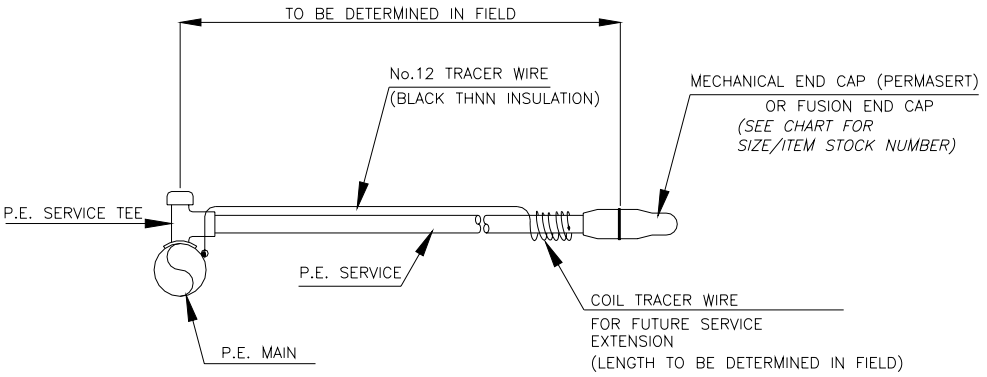
GENERAL NOTES:

1. ALL WINDOWS OR VENTS MUST BE 36" MINIMUM FROM GAS RISER AND HOUSE LINE TIE–IN.
2. STUB–OUT TO EXTEND 2" TO 4" BEYOND THE FINISHED WALL.

W.O.	R– MAIN	R– SVCS

DESIGNED BY: W. HUFELD	SEPARATION REQUIREMENTS FOR	DATE: JANUARY 27, 2003
PROCEDURES BY:	GAS SERVICES AND METER ASSEMBLIES	SEC MAP:
DRAWN BY: T. STATES		ATLAS:
CHECKED BY: G. S.		SCALE: NO SCALE
SUBSTRUCTURES:	LONG BEACH ENERGY	DRAWING NUMBER A–986
AS–BUILT:	A DEPARTMENT OF THE CITY OF LONG BEACH	

MECHANICAL END CAP (PERMASERT)	
P.E.PIPE SIZE	ITEM STOCK NUMBER
3/4"	659-27-11-080
1"	659-27-11-082
1 1/4"	659-27-11-084
2"	659-27-11-086

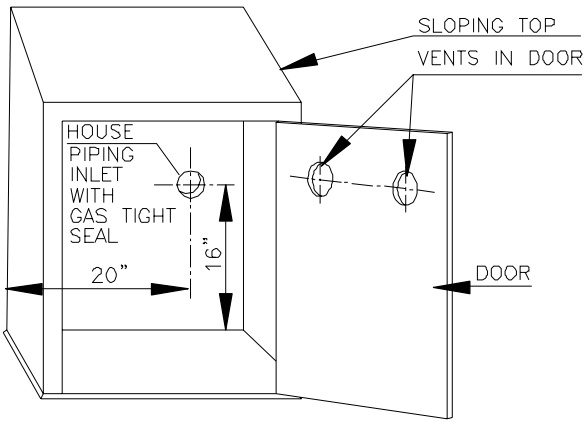


TYPICAL PLASTIC SERVICE STUB-OUT WITH MECHANICAL END CAP CONNECTED TO P.E. MAIN

W.O.

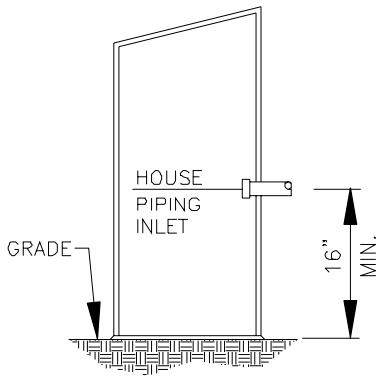
W.O.	R-	MAIN	R-	SVCS

DESIGNED BY: M. ZUKOWSKI	*TYPICAL PLASTIC SERVICE STUB-OUT WITH MECHANICAL END CAP CONNECTED TO P.E. MAIN*	DATE: OCTOBER 2, 2001
PROCEDURES BY:		SEC MAP:
DRAWN BY: T. STATES		ATLAS:
CHECKED BY: G.S.		SCALE: NONE
SUBSTRUCTURES:	LONG BEACH ENERGY	DRAWING NUMBER A- 989
AS-BUILT:	A DEPARTMENT OF THE CITY OF LONG BEACH	



FRONT VIEW OF METER CABINET
RESIDENCE, FLATS, APARTMENTS, HOTELS, ETC.

NOTE: DOORS TO METER CABINETS MUST BE HINGED ON SIDE ONLY



SIDE VIEW OF METER CABINET

SERVICE REQUIREMENT	MINIMUM INSIDE DIMENSIONS: WIDTH OF DOOR	HEIGHT OF DOOR	DEPTH OF METER CABINET
To accommodate one domestic meter and regulator where the consumption will not exceed 300 cu. ft. per hour	24"	30"	16"
(For each additional meter, add 15" to width of the door)			
To accommodate a header of 5 to 15 meters			20"
To accommodate a header of 16 or more meters			22"
To accommodate one meter and regulator for hotels, apartments, houses and similar buildings, where the consumptions will not exceed –			
400 cubic feet per hour	26"	34"	18"
500 cubic feet per hour	30"	40"	20"
900 cubic feet per hour	36"	42"	22"
1500 cubic feet per hour	38"	48"	22"

When gas meters are set above each other allow thirty inches (30") in height for the first row of meters, and for each additional row allow twenty-four inches (24") to the height and not to exceed four (4) rows of meters, also allow thirty-six inches (36") in width for the first meter and regulator, and for each additional meter add fifteen inches (15") to the width. These are all inside measurements.

The Municipal Code requires that the meter locations be accessible to Long Beach Energy employees at all times. Plan your meter locations so that they will not be inside a locked yard or otherwise inaccessible.

See A-985 for stub-out diagram

Enclosure may be external or built into building structure.

When meter rack exceeds three (3) in height a 48" wide concrete slab is required for the entire length of the rack.

Vents will be installed within 24" of the bottom and within 12" of the top of the cabinet.

HOUSE PIPING: The inlet connections for service house pipings for any building shall extend not more than two inches (2") into the space provided for the gas meter and shall be located sixteen inches (16") above the finished floor and twenty inches (20") from the left wall of the gas meter enclosure. Where two or more systems of house gas piping are installed in the same building the inlets shall be fifteen inches (15") apart, spaced horizontally and shall be plainly marked with tags, or otherwise, to designate the systems. Wherever it is necessary to install meters over each other, the inlet connections to the house piping shall be spaced twenty-four inches (24") apart vertically and shall not exceed four meters in height.

W.O.

W.O.	R-	MAIN	R-	SVCS

DESIGNED BY: W. HUFELD	DOMESTIC METER CABINET REQUIREMENTS	DATE: DEC. 18, 2002
PROCEDURES BY:		SEC MAP:
DRAWN BY: T. STATES/A. BERKERY		ATLAS:
CHECKED BY: M. J. Z.		SCALE: NO SCALE
SUBSTRUCTURES:	LONG BEACH ENERGY	DRAWING NUMBER A-990
AS-BUILT:	A DEPARTMENT OF THE CITY OF LONG BEACH	

Excess Flow Valve Policy

LONG BEACH ENERGY

NOTICE TO CUSTOMER PAYING THE BILL AT THIS ADDRESS OR NEW HOME BUILDER

EXCESS FLOW VALVE (EFV) AVAILABILITY

The Department of Transportation (DOT) requires operators of a natural gas distribution system to provide single family residential customers with information about excess flow valves (EFV). This notice applies only during initial installation of service lines and during replacements when there is time to notify the customer of their availability.

EFVs are mechanical shut-off devices that, under certain circumstances, can be attached to the service line running to your property. When installed, they are typically located at the point our service line attaches to our main line in the street. The function of EFVs is to shut off the flow of gas when the flow becomes much greater than normal, for example, if the service line was broken during an excavation accident. The EFV is not designed to activate if the customer's houseline is broken. An EVF is not the same component as an "earthquake valve".

Installation of such valves is done by Long Beach Energy only when:

1) the customer requests it,
2) the service line is being newly installed or replaced,
3) and when the customer is willing to pay for the installation -- currently a charge of $65.00 for the valve plus installation fee of $200.00.

The customer must agree to pay for any future maintenance and replacement costs associated with the EFV including the following:

- Permitting costs.
- Excavation costs plus any required pavement or landscaping repairs.
- All labor and material costs associated with EFV removal or replacement, which could be in the order of $4000.00.

Long Beach Energy makes no specific recommendation on the advisability of such valves. However we will provide additional information about their purpose and function to any customer or prospective customer who requests such information. If you would like additional information, please contact your Long Beach Energy representative at (562) 570-2030 or the California Public Utilities Commission.

I have read the above conditions and [ ] **accept** [ ] **decline** the installation of an **EFV** at this address(s): _____

_____

Date: ____/____/____

Company / Address (if different than address above):

_____

Name: _____Title: _____ Signature: _____

L:\Specifications\EFV.doc

REVISION 03/03/03